

CLAIMS

- 1 1. A magnetic head comprising:
2 a write head portion including a first magnetic pole and a second magnetic pole;
3 an induction coil being disposed at least in part between said first and second
4 magnetic poles;
5 an electrical lead of said induction coil being disposed in a layer of the magnetic
6 head;
7 a heat sink being coplanar within the magnetic head with said electrical lead of
8 said coil.

- 1 2. A magnetic head as described in claim 1 wherein said electrical lead is comprised
2 of copper and said heat sink is comprised of copper.

- 1 3. A magnetic head as described in claim 1 wherein said heat sink is disposed at
2 least in part upon said second magnetic pole.

- 1 4. A magnetic head as described in claim 1 wherein said electrical lead is fabricated
2 upon an insulation layer that is disposed in part above said second magnetic pole, and
3 wherein said heat sink is fabricated upon said insulation layer above said second
4 magnetic pole.

1 5. A magnetic head as described in claim 4 wherein said heat sink includes a first
2 substantial portion that is disposed above said second magnetic pole, and another
3 substantial portion that is disposed away from said second magnetic pole.

1 6. A magnetic head as described in claim 5 wherein said heat sink is disposed away
2 from an air bearing surface of the magnetic head.

1 7. A magnetic head as described in claim 1 further including a second heat sink, and
2 wherein said heat sink and said second heat sink are thermally interconnected by a heat
3 sink interconnect member.

1 8. A magnetic head as described in claim 7 wherein said second heat sink is
2 disposed below said first magnetic pole.

1 9. A magnetic head as described in claim 8 wherein said heat sink is thermally
2 interconnected through an interconnect member with a slider body portion of the
3 magnetic head.

1 10. A magnetic head as described in claim 8 wherein said heat sink is thermally
2 interconnected with said second heat sink through an interconnect member, and said
3 second heat sink is thermally interconnected with said slider body through a second
4 interconnect member.

1 11. A magnetic head as described in claim 1 wherein said magnetic head is a
2 longitudinal head.

1 12. A magnetic head as described in claim 1 wherein said magnetic head is a
2 perpendicular magnetic head.

3 13. A method for fabricating a magnetic head, comprising:
4 fabricating a first magnetic pole;
5 fabricating a second magnetic pole;
6 fabricating an induction coil, at least in part, between said first magnetic pole and
7 said second magnetic pole;
8 fabricating an electrical lead to said induction coil;
9 fabricating a heat sink member in the same fabrication step in which said
10 electrical lead is fabricated.

1 14. A method for fabricating a magnetic head as described in claim 13, comprising:
2 fabricating said heat sink in a location above said second magnetic pole.

1 15. A method for fabricating a magnetic head as described in claim 13 wherein said
2 electrical lead and said heat sink are fabricated in a photolithographic process.

1 16. A method for fabricating a magnetic head as described in claim 15 wherein said
2 photolithographic process includes the use of a mask for forming an electrical lead

3 electroplating trench, and said mask also includes an opening for forming a heat sink
4 trench for electroplating said heat sink therewithin.

1 17. A method for fabricating a magnetic head as described in claim 13 wherein said
2 heat sink includes a first portion that is disposed above said second magnetic pole and a
3 second portion that is disposed away from said second magnetic pole.

1 18. A method for fabricating a magnetic head as described in claim 13, including the
2 step of fabricating a second heat sink that is disposed below said first magnetic pole.

1 19. A method for fabricating a magnetic head as described in claim 18, including the
2 step of fabricating a thermal interconnect member between said first heat sink and said
3 second heat sink.

1 20. A method for fabricating a magnetic head as described in claim 19, including the
2 further step of fabricating a thermal interconnect member between said second heat sink
3 and a slider body portion of the magnetic head.

4 21. A hard disk drive, comprising:
5 at least one hard disk being adapted for rotary motion upon a disk drive;
6 at least one slider device having a slider body portion being adapted to fly over
7 said hard disk;

8 a magnetic head being formed on said slider body for writing data to said hard
9 disk, said magnetic head including:
10 a write head portion including a first magnetic pole and a second magnetic pole;
11 an induction coil being disposed at least in part between said first and second
12 magnetic poles;
13 an electrical lead of said induction coil being disposed in a layer of the magnetic
14 head;
15 a heat sink being coplanar within the magnetic head with said electrical lead of
16 said coil.

1 22. A hard disk drive as described in claim 21 wherein said heat sink is disposed at
2 least in part upon said second magnetic pole.

1 23. A hard disk drive as described in claim 21 wherein said electrical lead is
2 fabricated upon an insulation layer that is disposed in part above said second magnetic
3 pole, and wherein said heat sink is fabricated upon said insulation layer above said
4 second magnetic pole.

1 24. A hard disk drive as described in claim 21 further including a second heat sink,
2 and wherein said heat sink and said second heat sink are thermally interconnected by a
3 heat sink interconnect member.

1 25. A hard disk drive as described in claim 24 wherein said second heat sink is
2 disposed below said first magnetic pole.

1 26. A hard disk drive as described in claim 25 wherein said heat sink is thermally
2 interconnected through an interconnect member with a slider body portion of the
3 magnetic head.

1 27. A hard disk drive as described in claim 25 wherein said heat sink is thermally
2 interconnected with said second heat sink through an interconnect member, and said
3 second heat sink is thermally interconnected with said slider body through a second
4 interconnect member.